

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 Claim 1 (original): A method for determining the presence
2 or concentration of a substance in a medium, the method
3 comprising:
4 a) providing a sensor in the medium, wherein the
5 sensor includes at least one optical carrier and a
6 microsphere having a surface including receptors for
7 the substance, each of the at least one optical
8 carrier being coupled with the microsphere;
9 b) applying a light source to one of the at least one
10 optical carriers of the sensor;
11 c) detecting a transmission spectra of light from one
12 of the at least one optical carriers of the sensor;
13 and
14 d) determining a presence or concentration of the
15 substance based on a change in the transmission
16 spectra the detected light.

1 Claim 2 (original): The method of claim 1 further
2 comprising:
3 - determining a change in the transmission spectra of
4 the light due to a factor other than adsorption of the
5 substance onto the surface of the microsphere,
6 wherein the act of determining a presence or
7 concentration of the substance based on a property of the
8 detected light, wherein the property is based on a change
9 in the transmission spectra of the light, compensates for
10 the determined change in the transmission spectra of the
11 light due to a factor other than adsorption of the

12 substance onto the surface of the microsphere.

1 Claim 3 (original): The method of claim 2 wherein the
2 sensor includes a second microsphere coupled with each of
3 the at least one optical carrier,
4 wherein the second microsphere has a surface that is
5 free of receptors for the substance, and
6 wherein the act of determining a change in the
7 transmission spectra of the light due to a factor other
8 than adsorption of the substance on the surface of the
9 microsphere is based on a change in the transmission
10 spectra of the light due to the second microsphere.

Claims 4-17 (canceled)